

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

**AN ADJUSTMENT OF THE ELECTRIC
RATES, TERMS AND CONDITIONS OF
KENTUCKY UTILITIES COMPANY**

) **CASE NO.**
) **2003-00434**
)

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**PREPARED DIRECT TESTIMONY
OF
MIGUEL SANCHEZ
ON BEHALF OF NORTH AMERICAN STAINLESS**

DATED MARCH 23, 2004

1 **Q. State your name and business address.**

2 **A.** My name is Miguel Sanchez. I am the maintenance coordination manager at
3 North American Stainless. My business address is 6870 Hwy 42 East, Ghent,
4 Kentucky 41045.

5 **Q. Describe your education and experience qualifications.**

6 **A.** I received an Electrical Engineering degree from Universidad de Cadiz Spain. I
7 joined the Company Acerinox in 1976 as a maintenance engineer and have
8 worked in various capacities in that maintenance department. Due to the high rate
9 of growth of the company, I soon got involved in the new installations department
10 to help coordinate with many projects. I was lead project engineer for several
11 projects, and others took place during my time as manager of engineering and
12 electrical maintenance for the Acerinox Melt Shop and Hot Mill. In 1996, I
13 moved to the U.S. to provide technical support to NAS on engineering and
14 installation for the Hot Mill. After that, I participated in the Melt Shop project
15 from the beginning in the development of the electrical systems, electric arc
16 furnace (EAF) caster and other systems.

17 **Q. What is the purpose of your testimony?**

18 **A.** I am testifying on behalf of North American Stainless (NAS). My testimony
19 describes the nature of the NAS steel making process, the importance to NAS of
20 economically priced electric power, and NAS' reliance on Kentucky's promise of
21 low-priced power in selecting Ghent as the site of its North American operations.
22 I explain why it is NAS' view that the proposed new tariff that KU would apply to
23 NAS, and only NAS, is a completely unjustified effort to extract excessive

1 revenues from NAS rather than providing the service they are obliged to provide
2 under fair and reasonable rates.

3 **Q. Please summarize your testimony.**

4 A. NAS is categorically opposed to taking electric service from KU under the
5 proposed NCLS tariff. The tariff would produce rates that are excessive, it would
6 employ arbitrary and discriminatory terms for measuring NAS' load that would
7 exacerbate the excessive rates, and it would mandate curtailable service
8 provisions with 5 minutes' notice that unreasonably and unfairly interfere with
9 NAS' manufacturing process. Mr. Buechel's testimony demonstrates that
10 applying KU's LCI-TOD rate to the NAS melt shop load will provide an above
11 average return to KU. There is absolutely no basis for imposing a rate that is any
12 more costly to NAS than the LCI-TOD tariff. Also, NAS should not be treated
13 differently from other loads when measuring demand, or with respect to any other
14 tariff components. Specifically, NAS cannot agree to unlimited "system
15 contingency" curtailments in a tariff that is supposed to be firm service, and I
16 explain how this type of curtailment adversely affects the melt shop process. Also,
17 while NAS historically has had some flexibility in its process to accommodate
18 some planned curtailment, the very significant changes KU proposes to its
19 curtailable service rider may preclude NAS from continuing to subscribe to this
20 rider.

21 **Q. Where are the NAS facilities located?**

1 A. The NAS stainless steel production facilities are located in Ghent, Kentucky in
2 Carroll County. The facilities are located along the Ohio River about a mile from
3 the KU Ghent Plant. A recent photograph of the facility is attached.

4 **Q. Please describe the NAS facilities at Ghent.**

5 A. NAS is owned by Acerinox, S.A. of Madrid, Spain. In addition to the Ghent
6 facilities, Acerinox operates steel-making facilities in Spain and South Africa.
7 In 1990, Acerinox chose Kentucky over competing states to begin construction of
8 the largest and most efficient mill in North America for the production of stainless
9 steel. In recruiting Acerinox, the Commonwealth assured Acerinox that, although
10 NAS would not be allowed to purchase electricity in a competitive market, the
11 rates charged NAS by KU would be established by the Commission. In 1990,
12 NAS began construction and has never stopped. From 1990 to 1999, at a cost of
13 more than \$800,000,000, NAS constructed rolling mills, finishing lines and a
14 \$260 million hot mill, which was dedicated on March 24, 1999 by Governor
15 Patton and His Royal Highness, D. Felipe de Borbón, Prince of Asturias (Spain).
16 As of today, these facilities have a combined electric load of approximately
17 65,000 Kw, which is served by KU pursuant to two LCI-TOD arrangements.
18 After Governor Patton and representatives from the Economic Development
19 Cabinet visited Acerinox, in February 2000, NAS and Governor Patton
20 announced that NAS would construct the 100 MW electric arc furnace melt shop
21 in Ghent at an estimated capital cost of \$200 million and add another 150 jobs at
22 the facility site.

1 The electric arc furnace melts recycled scrap steel, and the molten steel is cast
2 into slabs that are processed into flat rolled stainless steel products. This method
3 of steel production is far more efficient than traditional “integrated” (*i.e.*, blast
4 furnace) steel production and provides significant environmental benefits by
5 recycling over half a million tons of scrap annually.

6 The long term viability of NAS requires that NAS be able to melt and cast slabs
7 rather than rely on the purchase of excess slabs economically from other
8 producers. NAS supplies stainless steel in globally competitive commodity
9 markets. It is essentially a high volume/ low margin business that requires very
10 efficient production to be successful. The cost of electricity comprises a very
11 large component of NAS’s overall operating and production costs. Reliable and
12 competitively priced electric power is, therefore, crucial to the economic viability
13 of NAS. Indeed, Kentucky’s generally low cost power, especially to support the
14 Commonwealth’s economic development efforts, was a key factor in NAS’s
15 decision to locate its North American operations in Kentucky.

16 **Q. Please describe the workings of the melt shop operation at the NAS facilities**
17 **at Ghent.**

18 A. The melt shop operation is a batch process that, on average, takes roughly 150
19 minutes to complete the three cascaded stages that the process involves. Initially,
20 approximately 70 tons of scrap steel is placed in the furnace. Electrodes are
21 lowered into the furnace and an electric charge is applied to create the arcing
22 effect (between the scrap and electrodes) that begins to melt the steel. Next, the
23 process is interrupted, the electrodes are withdrawn, additional scrap is added, the

1 electrodes are re-inserted and the melting re-commences. The process of melting
2 finishes in about 60 minutes. The molten metal is then poured into a transfer ladle,
3 which conveys it to an AOD (argon oxygen de-carbonization) converter while the
4 EAF begins a new melting process. The AOD proceeds with adjustments to the
5 batch chemistry based on the requirements of the steel products being made that
6 day. Upon completion, the contents of the AOD are taken to the Caster. The
7 Caster is a continuous process where the liquid steel in the ladle solidifies as it
8 flows through a rectangular mold in a controlled cooling system. This process is
9 designed to allow the interchange of ladles so that the flow of steel through the
10 caster is not interrupted. Due to the nature of this process, NAS is not able to
11 curtail its melting operation, even for brief periods of time, if doing so will
12 interrupt steel flowing through the Caster. All points in this process, however, are
13 not alike in terms of the effect of power curtailments, and NAS can be more
14 flexible in accommodating power disruptions during the earlier two stages,
15 provided that NAS can recover the production by drawing more power between
16 interruptions to melt faster at a reasonable cost. There are, obviously,
17 inefficiencies and added costs associated with unscheduled stopping and
18 restarting of “heats” that include various forms of thermal losses that can extend
19 the required length of a heat beyond the down time of the curtailment period. In
20 short, while KU may curtail power supply for a 10 minute period (under a
21 “system contingency”), the likely impact is a disruption of steel flow into the
22 caster, which translates into at least a 45 minute interruption of production. These
23 disruptions also degrade the apparent load factor of our operation.

1 **Q. You state that the rates and terms of the original special contract were not**
2 **appropriate for NAS' melt shop. Please explain.**

3 A. NAS and KU have each known since shortly after NAS began commercial
4 operation of the melt shop that disparities were found between the original design
5 expectations for the electric arc furnace that are captured in the current NAS
6 contract and the actual melt shop operation. In particular, for the test year, the
7 NAS actual (15 minute) demand at the melt shop averaged about 76,000 kw (NAS
8 has recently ramped the actual demand of the melt shop operation up to about
9 80,000 kw), but the contract demand is 100,000 kw. Because demand charges
10 under the contract are based on the contract demand, every month NAS pays for
11 approximately 20,000 kw of demand that it does not use and for which KU has no
12 corresponding cost requirements. As I explain below, I have spoken to KU
13 representatives concerning this disparity, but KU has been adamant in its
14 unwillingness to revise the existing contract as needed. NAS has paid LGE-KU
15 the minimum demand charge every month since the contract started after the
16 "start up period".

17 **Q. Please describe the circumstances that led NAS to file its complaint with the**
18 **Commission.**

19 A. As I explained above, KU rejected our requests to correct provisions of the
20 current service contract that both sides knew were unreasonable once NAS had
21 gained operational data on actual melt shop loads. NAS advised KU that the
22 contract should terminate after its initial term for reasons that were apparent to
23 both sides. NAS requested rates and terms that are more economic than the LCI-

1 TOD. NAS considers this logical and reasonable since the EAF load is served at
2 much higher voltage than its rolling and finishing operations that are on the LCI-
3 TOD tariff, and the investment required by LGE-KU to serve this EAF load is
4 much less than what is needed to serve the same load dispersed in much smaller
5 pieces on the utility's system. KU refused to negotiate any reasonable new
6 arrangement, and presented NAS with the options of extending the current
7 contract or facing a new tariff. Once NAS gave its notice to terminate the contract
8 at the end of the three year initial term (a year's notice was required), KU refused
9 to discuss any service terms until it filed its new tariff. This situation forced NAS
10 to file its Complaint seeking a Commission determination of rates that are just and
11 reasonable. KU responded with a proposed tariff that is punitive in its rates and
12 terms of service. Even the wholly inappropriate nomenclature of "non-
13 conforming" aims to create an inference that the NAS load is undesirable or
14 threatens system reliability when the fact of the matter is that KU has served this
15 load for nearly three years under the current contract without incident. In NAS'
16 view, the proposed tariff is an unfair effort to extract excessive revenues from
17 NAS that has no cost justification whatsoever.

18 **Q. Please explain your concerns with respect to the system contingency**
19 **curtailments KU would require NAS to provide under the NCLS tariff.**

20 **A.** NAS cannot agree to service in which KU has an unlimited ability to disrupt steel
21 production. NAS has a form of contingency curtailment in the current contract.
22 Under the contract, such curtailments were expressly limited to KU generator
23 forced outages or de-ratings or ECAR calls for automatic reserve sharing. NAS'

1 experience over the past three years has been that these calls have been excessive
2 in number. In 2003, NAS experienced 148 such automatic curtailments, including
3 27 in the month of February alone. These disruptions are very costly for NAS
4 since 3,400 tons of steel could not be produced in 2003 due to these interruptions.
5 Further, these interruptions increased the unit cost of the produced, as the
6 curtailments typically cut production when power levels are high (i.e., the most
7 efficient part of the melting process.) Given the frequency of these system
8 contingencies and the continued maturing of NAS' melting operations, NAS
9 cannot afford to have its manufacturing process continually interrupted by KU/
10 LG&E forced outages and de-rates. Steel coming from the furnace must support
11 the AOD and Continuous Caster, and both of those processes operate faster than
12 the furnace can melt. NAS consequently is continually trying to improve the "tap-
13 to-tap" time of the furnace to avoid down time for the caster. In short, every
14 minute counts. The "system contingency" curtailments that NAS has experienced
15 under the current contract clearly disrupt melting production to an extent that is
16 intolerable and is a serious impediment to the economic operation of the plant.
17 Now, KU proposes an NCLS tariff that makes these curtailments a mandatory
18 tariff condition and expands KU's right to curtail NAS' at any time to "facilitate
19 Company compliance with system contingencies [which the tariff no longer
20 defines] and with industry performance criteria." NAS cannot accept exposing its
21 operation to such vague and unlimited curtailments. KU has no right to demand
22 that NAS provide system contingency curtailment at all when, as Mr. Buechel

1 describes in his testimony, KU allocates costs to the NCLS class as a firm service
2 offering.

3 **Q. KU proposes to apply a 5 minute demand interval in measuring NAS'**
4 **demand under the NCLS tariff. Would you comment on the effect that this**
5 **would have on NAS melt shop costs and operations?**

6 A. Yes. KU claimed in Case No. 2003-00396 that using a 5 minute demand window
7 would increase NAS' billed demand by roughly 10 % compared to its "actual"
8 (15 minute demand) that applies to all other KU demand-metered loads. In its rate
9 case exhibits, KU uses a conversion factor of roughly 5.8%, as Mr. Buechel
10 describes in his testimony. I am aware that KU based the latter conversion on 5
11 minute interval measurements that KU took during part of the month of October
12 2003. Simply put, that small selection of data is not representative of the likely
13 effect on the NAS load. I have analyzed pulse data for the period October 2003 -
14 mid Jan 2004 . The data for this period of nearly four months indicates that a 5
15 minute demand interval would produce billed demands that are 10-13%, and
16 could be as much as 15 % higher than the 15 minute demand. NAS has not been
17 able to determine yet if the maximum demand control features of its EAF energy
18 management system can work properly on a 5 minute basis. NAS does not know
19 of any other EAF-based melt shops that are working under these parameters. In
20 brief, NAS's concern is that 5 minutes is not long enough to perform demand
21 control while providing the necessary energy input to melt steel. Different
22 amounts of energy are scheduled to conduct a safe melt process that efficiently
23 melts steel and avoids dangerous electrode breakage. The power control system

1 determines different optimal power levels at different points in the process. This
2 operation cannot conflict with a system that is trying to control a value that
3 averages in 5 minutes. In short, the likely effect of using a 5 minute window is
4 that KU will inflate the demand it charges NAS compared to all other demand
5 metered customers. Since KU holds no pretense that it has even looked at treating
6 other customers similarly, the tariff is an unjust and unfair attempt to discriminate
7 against NAS.

8 **Q. Do you have any other concerns with the proposed NCLS Tariff?**

9 **A.** Yes. In response to data request NAS 1-4, witnesses Thompson and Seelye state
10 that non-conforming loads could result in costs to KU associated with purchasing
11 Automatic Reserve Sharing (“ARS”) energy through ECAR during a sudden loss
12 of generation to cover the potential simultaneous instant load increase of a non-
13 conforming load. ARS is priced at the higher of \$100/MWh or market.

14 Witnesses Thompson and Seelye explain that these costs are addressed in the
15 demand component of the NCLS tariff. I reviewed the KU response to NAS data
16 request 2-4 in Case No. 2003-00396, which depicts all dates in the years 2001-
17 2003 where KU purchased ARS. I examined NAS’ melt shop loads on each of
18 those days for the years 2002 and 2003 and determined that NAS did not engage
19 in melting operations at all on 14 of those ARS days in 2002 and 2003. In short, it
20 does not appear that the NAS load was in any way responsible for the ARS
21 purchases, which are uniformly associated with operational problems at LG&E
22 and KU generating units. Mr. Buechel’s testimony addresses the rate
23 ramifications of this point in more detail.

1 **Q. Please Continue.**

2 A. It seems to me that KU's proposed use of a 5 minute demand interval is not
3 required operationally, but is simply an economic matter, i.e., to inflate the billed
4 demand units that KU will charge NAS. Mr. Buechel addresses this point in his
5 testimony. However, I would add that KU also makes no effort to be consistent in
6 this matter, as it would measure NAS' billed demand on a 5 minute basis while
7 measuring our curtailed demand using a 15 minute interval in its CSR rider. Since
8 NAS is either using or curtailing the same equipment, demand should be
9 measured on a consistent basis. Also, the NCLS tariff proposes to bill per kVA
10 while all other KU metered demands are measured based on kilowatts (kW).
11 KU's industrial tariff provides some allowance for power factor variance (it does
12 not contemplate any adjustments unless a customer's power factor at the time of
13 maximum demand is less than 90%). The proposed NCLS tariff contains no such
14 allowance and, consequently would inflate the billing demand by 10% by using a
15 kVa meter in lieu of the kw meter applicable to other loads. I see no basis in
16 KU's testimony or its cost study (which is premised on 15 minute kw demand
17 measurements) to inflate NAS' demand in this way.

18 **Q. Does NAS have concerns with KU's proposed modifications to the CSR?**

19 A. Yes. First, NAS has invested nearly \$1.3 billion in its Ghent facility in order to
20 produce stainless steel efficiently in an around-the-clock basis. The facility is not
21 designed to operate efficiently with repeated power curtailments. As the facility
22 has ramped up production, however, NAS has had some flexibility to curtail for
23 KU. KU's power supply with NAS, whether by tariff or special contract, must

1 meet NAS' continuous power needs with an economically competitive base rate.
2 NAS will continue to assess its ability to offer curtailment options based on its
3 excess production capabilities. Second, KU claims that it was increasing its CSR
4 credit from \$3.10/kw to \$4.09/ kw to reflect updated estimates of the avoided cost
5 of a combustion turbine. In fact, KU proposes very significant changes to the CSR
6 program. KU proposes to increase the hours of interruption from 200 hours per
7 year to 500 hours per year. In addition, the notice of interruption would be
8 reduced from one hour to 10 minutes. KU has not provided any cost-justification
9 for these changes, it did not discuss these changes with NAS before proposing
10 them, and it does not even mention these changes in its rate case testimony. The
11 proposed CSR modifications present significant operational problems for NAS.
12 As noted above, NAS must maintain steel melting production levels to provide
13 the slabs required to support its rolling and finishing operations. Further, NAS has
14 continually grown and expanded its operation in Ghent over the past decade. To
15 date, NAS has been able to accommodate KU's request for up to 200 hours of
16 CSR-based curtailment of both its melting and rolling facilities. NAS, however,
17 cannot accommodate curtailments if its only choice is a commitment of 500 hours
18 per year (and these are in addition to the uncompensated system contingency
19 curtailments that KU includes in the NCLS tariff). This amounts to nearly a
20 month of idle time. NAS cannot produce the levels of steel required to recover its
21 plant investment costs, or the fixed costs of 950 idled workers, and over 500
22 workers on contracted services, with this magnitude of power disruption. If KU
23 insists on this change to the CSR tariff, NAS may not be able to remain on that

1 rider. If it cannot continue subscribing to the CSR rider, the cost of power to NAS
2 will increase by almost \$3 million annually (approximately \$2.52 million in melt
3 shop operations according to Mr. Seelye's exhibits, and another \$410,000 in lost
4 CSR credits applicable to NAS' rolling and melting facilities.) Moreover, NAS
5 sees no operational or reliability reasons for the CSR changes KU proposes. It
6 seems to simply involve a KU effort to sell more energy off-system during higher
7 priced peak hours to the detriment of NAS and other Kentucky manufacturing
8 customers. In short, NAS cannot tolerate the operational limits the CSR changes
9 would require, the cost impact on NAS of losing CSR demand credits will be very
10 significant, and we see no valid reason for dropping the current CSR terms and
11 credits.

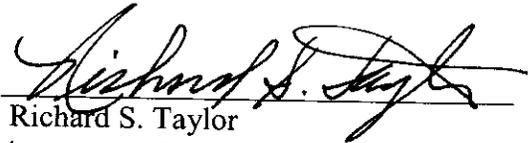
12 **Q. Does this conclude your testimony?**

13 **A.** This concludes my direct testimony in this case.



CERTIFICATE OF SERVICE

I hereby certify that the original and 10 copies of this foregoing Testimony of North American Stainless has been filed with the Kentucky Public Service Commission and a true and correct copy of the foregoing was served by U.S. first-class mail to the following persons indicated on the attached this 23 day of March, 2004.

A handwritten signature in cursive script, reading "Richard S. Taylor", written over a horizontal line.

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